

In the Claims:

A detailed listing of pending claims 1-15 is provided, below.

1. (Original) A superconducting magnesium diboride composite, comprising a superconducting magnesium-boride phase component and a metallic phase component, said composite obtainable from a porous magnesium boride preform component, said preform component comprising magnesium and boron, and introduction of a metallic component into said pores of said preform component, said introduction with at least one of temperature and pressure sufficient to infiltrate said preform, said metallic component selected from the group consisting of metals, alloys and combinations thereof, said metallic component having at least one of a melting point and a liquidus temperature less than about 1100°C.

2. (Original) The composite of Claim 1 wherein said superconducting phase component has a volume fraction greater than about 19% of said composite.

3. (Original) The composite of Claim 2 wherein said superconducting phase component comprises magnesium diboride.

4. (Original) The composite of Claim 3 wherein said superconducting phase has a volume fraction between about 20% and about 90% of said composite.

5. (Original) The composite of Claim 4 wherein said superconducting phase component is a multi-element phase comprising magnesium and boron.

6. (Original) The composite of Claim 1 wherein said metallic phase component comprises a component selected from the group consisting of metals, alloys and combinations thereof, said metallic phase component having a melting point less than about 1100°C, and said composite substantially without degradation of said superconducting phase component.

7. (Original) The composite of Claim 6 wherein said metallic phase component is selected from the group consisting of magnesium metal and a magnesium alloy, and said superconducting phase component comprises

magnesium diboride, said superconducting phase component having a volume fraction greater than about 19% of said composite.

8. (Original) The composite of Claim 7 further including a non-superconducting phase to enhance composite function.

9. (Original) A superconducting composite comprising a magnesium diboride superconducting phase component and a magnesium phase component, said magnesium diboride superconducting phase having a volume fraction greater than about 19% of said composite.

10. (Original) The composite of Claim 9 wherein said superconducting magnesium diboride phase is a multi-element phase comprising magnesium and boron.

11. (Original) A composite of Claim 9 wherein said superconducting phase has a volume fraction between about 20% and about 90% of said composite.

12. (Original) The composite of Claim 9 wherein said magnesium phase is a magnesium alloy including another metallic component selected from the group consisting of metals, alloys and combinations thereof, said other metallic component having a melting point less than about 1100°C and said composite substantially without degradation of said superconducting phase.

13. (Original) The composite of Claim 9 further including a non-superconducting phase to enhance composite function, said non-superconducting phase at least one of graphite, a metal, a ceramic, and a polymer material.

14. (Original) The composite of Claim 9 wherein said magnesium diboride superconducting phase comprises substantially straight aligned fibers.

15. (Original) The composite of Claim 9 having a preformed configuration.